



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,676	08/02/2002	Bruno Tocque	50146/003002	9433
21559	7590	06/13/2007		
CLARK & ELBING LLP 101 FEDERAL STREET BOSTON, MA 02110			EXAMINER CALAMITA, HEATHER	
			ART UNIT 1637	PAPER NUMBER
			MAIL DATE 06/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/070,676

Applicant(s)

TOCQUE ET AL.

Examiner

Heather G. Calamita, Ph.D.

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 56 and 67-112 is/are pending in the application.
- 4a) Of the above claim(s) 56 and 67-78, 106 AND 107 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 79-93 is/are allowed.
- 6) ☒ Claim(s) 94-105 and 108-112 is/are rejected.
- 7) ☒ Claim(s) 106 and 107 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Status of Application, Amendments, and/or Claims*

1. Claims 56 and 67-112 are pending. Claims 79-112 are under examination. Claims 56, 67-78, 106 and 107 are withdrawn as being directed to non-elected subject matter. All arguments have been fully considered and thoroughly reviewed, but are deemed not persuasive for the reasons that follow. Any objections and rejections not reiterated below are hereby withdrawn.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 94-105 and 108-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schena et al. (PNAS, 1996) in view of Komarova et al. (Oncogene, 1998).

With regard to claims 94, Schena et al. teach a method comprising

(a) first labeled nucleic acid probes prepared or derived from mammalian cells contacted with a test compound and a nucleic acid library (see p. 10614 under *materials and methods* col. 2 where the nucleic acid probes are derived from Jurkat cells. The library of immobilized nucleic acids is the microarray to which the probes are hybridized. Schena et al. teach the cells were either treated with heat (i.e. heat shocked) or not treated (i.e. control) at p. 10615 col. 1 under *Results*).

(b) second labeled nucleic acid probes prepared or derived from mammalian cells not contacted with the test compound and the nucleic acid library [see p. 10614 under *Materials and Methods* col. 2

Art Unit: 1637

where the nucleic acid probes are derived from Jurkat cells. Schena et al. teach the cells were treated with heat (i.e. heat shocked) or not treated (i.e. control) at p. 10615 col. 1 under *Results*].

Wherein said nucleic acid library is immobilized on a support and consists essentially of marker nucleic acid molecules specific for all or a portion of one or more differentially spliced human genes present in a human cell which is undergoing or has undergone apoptosis and at least one or more control nucleic acid molecules which normalize the hybridization signals between the first and second labeled nucleic acid probes and nucleic acid library and (see p. 10614 under *materials and methods* col. 2 where the nucleic acid probes are derived from Jurkat cells. The library of immobilized nucleic acids is the microarray to which the probes are hybridized. Schena et al. teach the cells were either treated with heat (i.e. heat shocked) or not treated (i.e. control) at p. 10615 col. 1 under *Results*. The phrase “consisting essentially of” is interpreted as comprising)

wherein the contacting steps (a) and (b) produce a first and second hybridization profile, respectively and detection of substantially equivalent hybridization signals between said first and second labeled nucleic acid probes and the control nucleic acid molecules and of a difference between the profiles indicates the toxicity of the test compound (see p. 10615 col. 1 under *Results* Figure 1 and legend where the profile of the heat shocked cells are compared to the cells that were not heat shocked).

With regard to claim 95, Schena et al. teach the first and second nucleic probes of steps (a) and (b), respectively, correspond to mRNAs of cells contacted and not contacted with said test compound (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA from the Jurkat cells treated and not treated with heat was isolated, reverse transcribed into labeled cDNA).

With regard to claim 96, Schena et al. teach the first and second nucleic probes of steps (a) and (b), respectively, are cDNA nucleic acid molecules or cDNA nucleic acid molecule fragments prepared from RNA of cells contacted and not contacted with said test compound (see p. 10615 col. 1 under

Art Unit: 1637

*Results* first full paragraph, where the mRNA from the Jurkat cells treated and not treated with heat was isolated, reverse transcribed into labeled cDNA).

With regard to claim 97, Schena et al. teach the first and second nucleic probes of steps (a) and (b), respectively, are amplification products (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA from the Jurkat cells treated and not treated with heat was isolated, reverse transcribed into labeled cDNA).

With regard to claim 98, Schena et al. teach the first and second nucleic probes of steps (a) and (b), respectively, are labeled by radioactive, fluorescent, enzymatic or colorimetric labels (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA from the Jurkat cells treated and not treated with heat was isolated, reverse transcribed into labeled cDNA, where the labels are fluorescent, specifically, Cy5 and Fluorescein).

With regard to claim 99, Schena et al. teach the test compound is an individual compound or is present in a mixture of compounds (see p. 10615 col. 1 under *Results* first full paragraph, where the test compound is heat, specifically the cells are heat shocked).

With regard to claim 100, Schena et al. teach the library further comprises nucleic acid molecules specific for genes whose level of expression is modified in a cell (see p. 10614 under *Human cDNA Clones* where the microarray comprises 1046 gene specific cDNAs ).

With regard to claim 108 Schena et al. teach the cells contacted or not contacted with said test compound are of human origin (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA is from Jurkat cells, which is a cell line derived from human peripheral blood cells).

With regard to claim 109, Schena et al. teach the cells contacted or not contacted with said test compound are cell lines (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA is from Jurkat cells, which is a cell line derived from human peripheral blood cells).

Art Unit: 1637

With regard to claim 110, Schena et al. teach the cells contacted or not contacted with said test compound are primary cultures (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA was isolated from Jurkat cells).

With regard to claim 111, Schena et al. teach the support is selected from the group consisting of a filter, a membrane, a glass plate or a bio-chip (see p. 10614 col. 2 under *Microarray Preparation* where the support is a microscope slide, specifically the microscope slide is glass).

With regard to claim 112, Schena et al. teach the first and second labeled nucleic acid probes are prepared or derived from a first and a second sample, respectively, comprising ribonucleic acid (RNA) molecules from mammalian cells contacted and not contacted, respectively, with said test compound (see p. 10615 col. 1 under *Results* first full paragraph, where the mRNA from the Jurkat cells treated and not treated with heat was isolated, reverse transcribed into labeled cDNA).

With regard to claim 101, Schena et al. teach the library is prepared by (i) hybridizing a first nucleic acid population from a mammalian cell in which is undergoing or has undergone heat shock and a second nucleic acid population from a cell which is not undergoing or has not undergone heat shock and (ii) separating, from the hybrids formed, nucleic acid molecules comprising an unpaired region (see p. 10614 under *materials and methods* col. 2 where the nucleic acid probes are derived from Jurkat cells. The library of immobilized nucleic acids is the microarray to which the probes are hybridized. Schena et al. teach the cells were either treated with heat (i.e. heat shocked) or not treated (i.e. control) at p. 10615 col. 1 under *Results* and see p. 10615 col. 1 under *Results* Figure 1 and legend where the profile of the heat shocked cells are compared to the cells that were not heat shocked).

Schena et al. do not teach all of the limitations of claims 94-105 and 108-112. Specifically, with regard to claims 94 and 108, Schena et al. do not teach apoptosis.

With regard to claims 94 and 108, Komarova et al. teach apoptosis (see the abstract, where Komarova et al. teach p53 as controlling cell response to apoptosis. Additionally, Komarova et al. teach

Art Unit: 1637

using DNA array hybridization to study p53-dependent stress response in tissues exposed to radiation as compared to normal tissue).

With regard to claim 102, Komarova et al. teach apoptosis is induced or enhanced in said mammalian cell (see p. 1090 under Results, where Komarova teaches p53 accumulates in cells treated with radiation resulting in apoptosis).

With regard to claims 103 and 104, Komarova et al. teach oncogenes (see abstract, where p53 is the oncogene).

With regard to claim 105, Komarova et al. teach WAF-1 (see p. 1090 Table 1).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use the method and microarray as taught by Schena et al. to study apoptosis as an indicator of the toxicity of compounds applied to cells as taught by Komarova et al. in order to have the efficiency of a chip based approach to study gene expression in humans. As noted by Schena, "Microarrays offer a number of advantages over other potential high capacity approaches to expression analysis. The chip based approach enables small hybridization volumes, high array densities, and the used of fluorescent labeling and detection schemes. The use of cDNA clones provides hybridization specificity that is not readily attained with oligonucleotide arrays. The parallel format of the assay provides a simultaneous differential expression readout for greater than 1000 genes (see the paragraph bridging p. 10618 and 10619)." An ordinary practitioner would have been motivated to use the method and microarray as taught by Schena et al. to study apoptosis as an indicator of the toxicity of compounds applied to cells as taught by Komarova et al. in order to have the efficiency of a chip based approach to study gene expression in humans, as the chip based approach enables small hybridization volumes, high array densities, and the used of fluorescent labeling and detection schemes.

*Response to Arguments*

Art Unit: 1637

3. Applicant's arguments filed March 16, 2007 have been fully considered but they are not persuasive. Applicant argue beginning on page 17 of the response that the amendment of "consists essentially of" narrows the scope of the claim such that the current rejections do not apply. This argument is not persuasive because MPEP 2111.03 [R-3] states "For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355." The rejections are therefore maintained.

*Summary*

4. No claims were allowable

*Conclusion*

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



Art Unit: 1637

*Correspondence*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather G. Calamita whose telephone number is 571.272.2876 and whose e-mail address is heather.calamita@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner can normally be reached on Monday through Thursday, 7:00 AM to 5:30 PM.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at 571.272.0782.

Papers related to this application may be faxed to Group 1637 via the PTO Fax Center using the fax number 571.273.8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571.272.0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

hgc

TERESA E. STRZELECKA, PH.D.  
PRIMARY EXAMINER

*Teresa Strzelecka*  
6/7/07